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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/766,564 | 01/29/2004 | Tae-Sung Kim | P57001 | 4048 |
| 7590 07/27/2005 | | | EXAMINER | |
| Robert E. Bushnell 1522 K Street, N.W., Suite 300 Washington, DC 20005 | | | ERDEM, FAZLI | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2826 | |

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/766,564

Applicant(s)

KIM, TAE-SUNG

Examiner

Fazli Erdem

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-10, 14-22 and 25-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-10, 14-22 and 25-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 4, 9, 10, 14, 19, 20 and 26-28 rejected under 35 U.S.C. 103(a) as being unpatentable over Yaegashi (JP 2002026335) in view of Fujikawa (6,414,738) further in view of Arai et al. (6,160,272)

Regarding Claims 4, 9, 10, 14, 19, 20 and 26-28. Yaegashi discloses a thin film transistor and method of manufacturing the same where in Fig. 6, either the source or the gate electrode is composed of a layered structure composed of an Aluminum film 33a, an oxygen containing Aluminum film 33b that functions as a diffusion preventing layer and a Titanium film 33c. Yaegashi fails to disclose the required diffusion preventing film and the required nitrogen ratio. However, Fujikawa discloses a display structure where in Fig. 5, diffusion preventing/barrier film of titanium nitride is disposed between aluminum-based electrode 8 and the titanium based electrode 13. Furthermore, Arai et al. disclose a self-light-emitting apparatus and semiconductor device used in the apparatus where in column 1 the required nitrogen ratio is disclosed.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the required diffusion preventing/barrier film/layer and

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the required nitrogen ratio in Yaegashi as taught by Fujikawa and Arai et al. respectively, in order to have a liquid crystal display device with increased performance.

3. Claims 5-8, 15-18, 21, 22 and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Yaegashi (JP 2002026335) in view of Fujikawa (6,414,738) further in view of Arai et al. (6,160,272) further in view of Miyazaki et al. (5,804,878)

Regarding Claims 5-8, 15-18, 21, 22 and 25. Yaegashi discloses a thin film transistor and method of manufacturing the same where in Fig. 6, either the source or the gate electrode is composed of a layered structure composed of an Aluminum film 33a, an oxygen containing Aluminum film 33b that functions as a diffusion preventing layer and a Titanium film 33c. Yaegashi fails to disclose the required diffusion preventing film, the required nitrogen ratio and the required titanium nitride thickness. However, Fujikawa discloses a display structure where in Fig. 5, diffusion preventing/barrier film of titanium nitride is disposed between aluminum-based electrode 8 and the titanium based electrode 13. Furthermore, Arai et al. disclose a self-light-emitting apparatus and semiconductor device used in the apparatus where in column 1 the required nitrogen ratio is disclosed. Finally, Miyazaki et al. disclose an electronic device where in 5, the required titanium nitride thickness is disclosed.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the required diffusion preventing/barrier film/layer, the required nitrogen ratio and the required titanium nitride thickness in Yaegashi as taught by Fujikawa, Arai et al. and Miyazaki et al. respectively, in order to have a liquid crystal display device with increased performance.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fazli Erdem whose telephone number is (571) 272-1914. The examiner can normally be reached on M - F 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FE
July 24, 2005



NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800